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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,657	11/21/2003	Hiroshi Tsuda	Q77860	9047
23373	7590	06/29/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			NGUYEN, TU T	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/717,657

Applicant(s)

TSUDA, HIROSHI

Examiner

Tu T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2,6,7 and 9 is/are allowed.
- 6) ☒ Claim(s) 1,3-5,8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,5,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunphy et al (5,426,297).

With respect to claims 1,8, Dunphy discloses an optical fiber strain sensor device (fig 1). The device comprises: an FBG sensor including an optical fiber 20 (fig 1) having an FBG 24,28,34 (fig 1) written therein, a broadband light source 10 (fig 1) for directing a broadband light ray to the FBG sensor, and a filter 50 (fig 1) (column 4, lines 25-35) that reflects or transmits a light ray reflected from the FBG sensor, detector 54 or 82 or 68 (fig 1) for detecting a change in a center wavelength (abstract).

Dunphy does not explicitly disclose mounting the sensor on an object to be measured. However, Dunphy discloses that mounting such device to a structure to be measured would have been known in the art (column 1, lines 29-30). It would have been obvious to mount Dunphy's sensor to an object to be measured as claimed to monitor conditions of the object.

With respect to claim 5, the claimed FBG filter or dielectric multi-layer filter would have been known. It would have been obvious to modify Dunphy with different type of filters for different using purposes.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunphy et al (5,426,297) in view of Bennion et al (6,018,160).

With respect to claim 3, Dunphy does not disclose an optical circulator. Bennion discloses using an optical circulator 2 (fig 1) for reflecting light. It would have been obvious to modify Dunphy with Bennion's optical circulator to separate the reflected light more efficient.

With respect to claim 4, refer to discussion in claim 3 for the claimed optical circulator. Further, it would have been obvious to modify Dunphy with a plurality of optical circulators to enhance the result.

### ***Allowable Subject Matter***

Claims 2,6-7,9 are allowed.

Prior art of record does not disclose a strain sensor. The sensor comprises: means for detecting an amplitude change in a signal that is obtained by inverting the phase of one of: (a) a signal representative of the light ray reflected from the filter and (b) a signal representative of the light ray transmitted through the filter, and then adding

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the inverted and non-inverted signals to each other which structurally arranged and functionally operated as claimed in claim 2.

Prior art of record does not disclose a strain sensor. The sensor comprises: detecting a strain change sensed by the FBG sensor by summing the light ray reflected from the filter and the light ray transmitted through the filter with one of the light rays inverted in phase, the light ray reflected from the filter and the light ray transmitted through the filter changing in mutually opposite phase with respect to a change in the light ray reflected from the FBQ, and detecting an amplitude change in the sum which structurally arranged and functionally operated as claimed in claim 9.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., measurement of a strain caused by an ultrasonic wave) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu T. Nguyen whose telephone number is (571) 272-2424. The examiner can normally be reached on T-F 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley Jr. can be reached on (571) 272-2800 Ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tu T. Nguyen  
Primary Examiner  
Art Unit 2877

06/21/2005